

Data requirements for biodiversity indicators

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The rational use and conservation of biodiversity requires programmes of inventorying and monitoring that allow understanding the past and present states of biodiversity and the causes of its change. Inventories establish a baseline distribution of biodiversity for a particular place at a particular time. Monitoring addresses the issue of change or lack of change of biodiversity through time at particular places. Ideally some sort of modelling should allow for predicting future states of biodiversity.

Biodiversity is a dynamic property of an ecosystem. The goal of a monitoring program is to document natural patterns of change or lack of change in order to establish a baseline for understanding the impact of natural disturbance on species composition and abundance in communities and ecosystems. Once this baseline is established it can be used to detect changes in biodiversity that result from human disturbance.

An inventory will establish the magnitude of biodiversity over relatively short time spans whereas monitoring will serve to connect these observations over time, to assist in hypothesis testing and to help establish an early warning system that may be part of a global biodiversity assessment.

The total assessment of biodiversity at a given site, let alone for a country or a region, through enumeration of the genetic diversity, the species and habitats is an impossible task to fulfil. A number of indicators or proxies is therefore required that provide information that is as unbiased as possible. Besides indicators for biodiversity other indicators are used to measure environmental health.

The choice of an appropriate indicator is very important in terms of information and cost. To increase the usefulness of an indicator several frameworks have been developed. One of the most widely used is the Drivers-Pressure-State-Impact-Response DPSIR framework, but simpler and perhaps more convenient schemes are in use as well. At the European level, loss of biodiversity is one of the about ten policy fields to which these schemes are applied

All these indicators require massive collection of data and the good use of these collections is still a major problem in applied and fundamental ecological research both on governmental and academic level. Dealing with the massive information that has already been gathered and the still more massive information that will be collected in the future is one of the major challenges of the scientific community and the end-users of scientific information in general. The networking efforts of marine biodiversity in Europe provide a good example of the problems and the ways towards their solution.